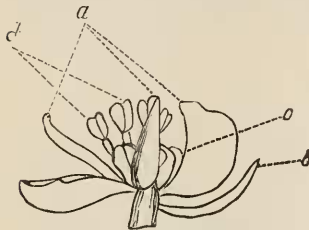


of *R. abortivus*, var. *micranthus*, my attention was called to a singular structure in a head of carpels and occupying the normal position of an achenium. Upon examination it proved to be a flower of the following structure. The flower was raised on a short peduncle and subtended by a bract (b). The calyx (a) was very irregular, no two of the *four* sepals being of the same shape. The corolla was obsolete. The stamens (d), eight in number, were nearly normal though in some the filament and anther seemed to blend. There were about ten carpels (c) of normal shape excepting the beak was somewhat elongated. The accompanying figure shows the relation



of the parts, but is greatly magnified, the flower really being no longer than one of the carpels. The stamens and petals of the flower, in the head of which this structure occurred, had fallen.

This variety of *R. abortivus* in this region has the carpels in an elongated head, the length being often twice the diameter.

There is another variety of this species (var. *grandiflora*) which grows upon cliffs high above the valleys, in which the petals far exceed the sepals in length, and the flower expands half an inch.

*Ranunculus fascicularis*, Muhl., has in this region entire root-leaves and beginners *invariably* place it along with *R. rhomboideus*, if they use Gray's Manual, as this "root leaves are not divided to the very base." Is it unusual for this plant to have entire root-leaves, or is there some defect in the key?—F. L. HARVEY, *Fayetteville, Ark.*

A Synopsis of the North American Lichens.\* Part I, comprising the Parmeliacei, Cladoniæ, and Cœnogoniæ; by Edward Tuckerman, M. A.; Boston, S. E. Cassino, 1882.—This book is exactly what is needed to give an impetus to the study of Lichens. Heretofore very few botanists have been attracted to their study from the great lack of convenient literature, but one can hardly turn over the handsomely printed pages of this little octavo volume without feeling a desire to cultivate a field that has so long been neglected. If ever the proverbial "felt want" was a real one it was in this case; and has been supplied by the only person really able to publish an authoritative work of this kind. In this book of some 260 pages the author has described the species of one tribe, the *Parmeliacei*, containing nearly 40 genera, and two families under the tribe *Lecideacei*, namely, *Cladoniæ* and *Cœnogoniæ*; both of which add but four genera. These comprise the more conspicuous lichens, just those to which students are first attracted. In view of the

\*The above notice was prepared for the April GAZETTE, but by mistake was omitted.

unsettled condition of this group of plants it must be exceedingly difficult for a philosophical mind to feel satisfied in their study, and this is apparently exactly Prof. Tuckerman's position. The ordinary multiplier of species would meet with no difficulty, but would reap a rich harvest among the bewildering display of forms; but our author has no such thought and with evident reluctance sends out the present book with its species, "in great part, sufficiently well settled." All through the work one finds new things described, but not as yet admitted to specific rank, and having only provisional places. These, we are told, the author would have preferred to keep back, "with Horace, *nonum in annum*." We are thankful however that he did not in this case follow literally the precepts of the genial poet, for this work will enable more of us to help the author in fixing the uncertain forms. There is usually no loss in putting out a tentative work, for observers are never so provoked into reporting their observations as when they think they are correcting blunders. Our author also thinks that Lichenology has not kept pace with the "diagnostic enumeration of new forms called arbitrarily species;" which same may be said of some other groups of plants. As students of Phanogamic Botany are in the habit of looking to Robert Brown as the most philosophical observer, so the students of Lichens look with equal veneration upon Elias Fries.

In some 20 pages of introduction Prof. Tuckerman gives a capital view of the present status of our knowledge concerning lichens. This is followed by a list of recent authors and a key to the 72 genera, grouped under the two series, *Gymnocarpi*, and *Angiocarpi*, names that remind us of our series of Dicotyledons. Then follows the body of the work, containing quite a full description of characters, localities, and relations of the species. Our copy happened to be faulty, lacking pages 257-260 and thus depriving us of two or three small genera; nor could we find *Thamnolia* in the index, although it appears in the body of the work.

Nearly 500 species are described, the largest genus being *Lecanora*, numbering 56 species. The other large genera are *Cladonia* with 35 species, *Parmelia* 30, *Placodium* 28, *Collema* 27, *Leptogium* 25, *Pannaria* 24, *Cetraria* 22, and *Physcia* and *Stictis* each 21. This shows remarkable uniformity in the size of the genera; but in the other genera the number of species drops very rapidly into the single digits.

It is to be hoped and expected that one of the results of this book will be the more earnest study of this puzzling group of plants, which very fact will hasten the reading of many riddles. There is no reason now why Lichens should not have as many devotees as most other groups of Cryptogamia.—J. M. C.

**Action of Acids on Cellulose.**—"Acids (especially sulphuric acid) when greatly diluted\* cause starch grains and cellulose at the

\*Italics mine. L. S.